

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

To:

see form PCT/ISA/220

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/US2004/034548

International filing date (day/month/year)
19.10.2004

Priority date (day/month/year)
21.10.2003

International Patent Classification (IPC) or both national classification and IPC
C07C271/40, C07D519/00, C07D213/64, A61K31/27, A61K31/4406, A61K31/407, A61K31/5365, A61P25/00

Applicant
SENTION, INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523656 epmu d
Fax: +49 89 2399 - 4465

Authorized Officer

Österle, C

Telephone No. +49 89 2399-8120



WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITYInternational application No.
PCT/US2004/034548

AP20 Rec'd PCT/PTO 21 APR 2006

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2004/034548

Box No. III Non-establishment of opinion with regard to novelty, inventive step and Industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

- ☐ the entire international application,
- ☒ claims Nos. 1-53 (in part)

because:

- ☒ the said international application, or the said claims Nos. 25-50 (method of treatment) relate to the following subject matter which does not require an international preliminary examination (*specify*):

see separate sheet

- ☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 1-6,12-51 are so unclear that no meaningful opinion could be formed (*specify*):

see separate sheet

- ☒ the claims, or said claims Nos. 1-8,12-53 are so inadequately supported by the description that no meaningful opinion could be formed.
- ☐ no international search report has been established for the whole application or for said claims Nos.
- ☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form

- ☐ has not been furnished
- ☐ does not comply with the standard

the computer readable form

- ☐ has not been furnished
- ☐ does not comply with the standard

- ☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-bis of the Administrative Instructions.
- ☐ See separate sheet for further details

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

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Box No. IV Lack of unity of invention

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has:
- ☐ paid additional fees.
 - ☐ paid additional fees under protest.
 - ☒ not paid additional fees.
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is
- ☐ complied with
 - ☒ not complied with for the following reasons:
see separate sheet
4. Consequently, this report has been established in respect of the following parts of the international application:
- ☐ all parts.
 - ☒ the parts relating to claims Nos. 1-53 (in part)

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	
	No: Claims	1-53
Inventive step (IS)	Yes: Claims	
	No: Claims	1-53
Industrial applicability (IA)	Yes: Claims	1-24,51-53
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/US2004/034548

IAP20 Rec'd PCT/PTO 21 APR 2006

Re Item III

Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. Claims 25-50 relate to subject-matter considered by this Authority to be covered by the provisions of Rule 67.1(iv) PCT. Consequently, no opinion will be formulated with respect to the industrial applicability of the subject-matter of these claims (Article 34(4)(a)(I) PCT).
2. In claims 1-6 and 12-51 compounds are defined by a desirable technical feature without clearly defining the structure of these compounds. The subject-matter of claims 1-6 and 12-51 has only been searched insofar as they relate to compounds as defined in claim 7.
3. The subject-matter of claims 1-8 and 12-53 does not find support in the present description. In the description only very few compounds have been shown to exhibit the desired properties, whereas the claims encompass a large number of compounds. Furthermore, the search for pertinent prior art with respect to the subject-matter of claims 7, 8 and 12-53 has revealed so many novelty destroying compounds that only a small representative selection could be cited in the search report.
The search therefore has been restricted to compounds of claims 9-11

Re Item IV

Lack of unity of invention

1. A lack of unity objection has been raised in the international preliminary search report. This objection is maintained. This report therefore only relates to the subject-matter of the first invention.

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/US2004/034548

- D1: WO 96/02524 A (MEDIOLANUM FARMACEUTICI S.P.A; TERNI, PATRIZIA; MAIRANI, LUCIA; MANDEL) 1 February 1996 (1996-02-01)
- D2: DE 38 05 744 A1 (SANDOZ-PATENT-GMBH, 7850 LOERRACH, DE; NOVARTIS AG, BASEL) 15 September 1988 (1988-09-15)
- D3: US-A-4 948 807 (ROSIN ET AL) 14 August 1990 (1990-08-14)
- D4: DATABASE CA [Online] CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; KOYAMA, KAZUO ET AL: "Pharmaceuticals containing (hydroxybenzyl)amines as acetylcholine esterase inhibitors and selective serotonin reuptake inhibitors" XP002331878 retrieved from STN Database accession no. 2004:291183
- D5: DATABASE CA [Online] CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; GOTO, GIICHI ET AL: "Preparation of aromatic carbamates as choline esterase inhibitors for improvement of cerebral function" XP002331879 retrieved from STN Database accession no. 1991:206818
- D6: RAMPA A ET AL: "Acetylcholinesterase inhibitors: SAR AND KINETIC STUDIES ON OMEGA-[N-METHYL-N-(3-ALKYLCARBAMOXYLOXYPHENYL)METHYL]AMINOALKOXYARYL DERIVATIVES" JOURNAL OF MEDICINAL CHEMISTRY, AMERICAN CHEMICAL SOCIETY. WASHINGTON, US, vol. 44, no. 23, 2001, pages 3810-3820, XP002297756 ISSN: 0022-2623
- D7: ELMALEM E ET AL: "ANTAGONISM OF MORPHINE-INDUCED RESPIRATORY DEPRESSION BY NOVEL ANTICHOLINESTERASE AGENTS" NEUROPHARMACOLOGY, PERGAMON PRESS, OXFORD, GB, vol. 30, no. 10, October 1991 (1991-10), pages 1059-1064, XP001004447 ISSN: 0028-3908
- D8: AMSTUTZ R ET AL: "CYCLISCHE PHENYL-CARBAMATE DES MIOTIN-TYPS UND IHRE WIRKUNG AUF DIE ACETYLCHOLINESTERASE CYCLIC PHENYL CARBAMATES AND THEIR ACTION ON ACETYLCHOLINESTERASE" HELVETICA CHIMICA ACTA, VERLAG HELVETICA CHIMICA ACTA. BASEL, CH, vol. 73, no. 3, 1990, pages 739-753, XP009047338 ISSN: 0018-019X
- D9: STERLING J: "novel dual inhibitors of AchE and MAO" JOURNAL OF MEDICINAL CHEMISTRY, AMERICAN CHEMICAL SOCIETY. WASHINGTON, US, vol. 45, no. 24, 2002, pages 5260-5279, XP002296523 ISSN: 0022-2623
- D10: FR-A-2 719 047 (FABRE MEDICAMENT PIERRE) 27 October 1995

- (1995-10-27)
- D11: V. TUMIATTI ET AL: "[4-[[N-(3-Chlorophenyl)carbamoyl]oxy]-2-b utynyl]-trimethylammonium (McN-A-343)-related compounds. Effect of the butnyl chain inclusion into an aromatic unit on the potency for muscarinic receptors" BIOORGANIC & MEDICINAL CHEMISTRY, vol. 8, 2000, pages 681-689, XP002331877
- D12: DATABASE BEILSTEIN BEILSTEIN INSTITUT FUER CHEMISCHE WISSENSCHAFTEN, FRANKFURT AM MAIN, DE; XP002331880

1. Novelty (Article 33(2) PCT):

The subject-matter of claims 1-53 is anticipated by D1-D11.

The functional features of claims 1-53 cannot limit the subject-matter of the claims to render them novel since the claims relate to *compounds*.

Also, the claims relating to medial treatment are considered to be anticipated by documents disclosing any medical treatment using such compounds.

Re Item VIII

Certain observations on the international application

Present claims 1-6 and 12-51 are defined by functional features/features defining a desired property of the compounds rather than by chemical structures. The subject-matter of the claims therefore lack clarity. Furthermore, it is clear from the description that only a small part of the claimed subject-matter finds support. The subject-matter of claims 1-6 and 12-51 therefore does not fulfil the requirements of Article 6 PCT.